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HEAD OFFICE: TORONTO

Vol. VI.

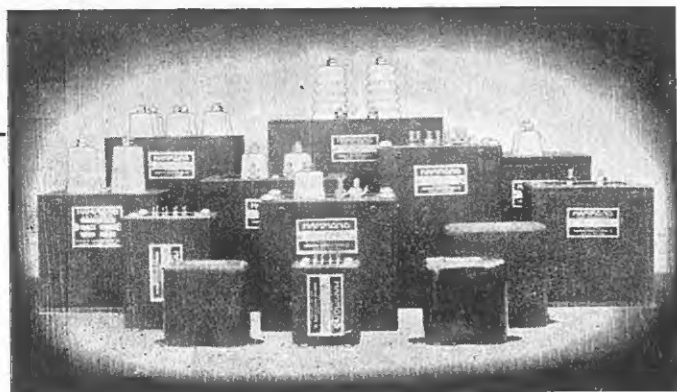
JUNE 1945

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No. 1



THE CANADIAN AMATEUR RADIO OPERATORS' ASSOCIATION



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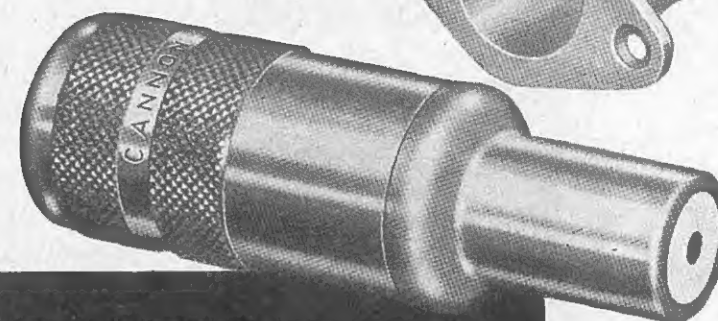
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## A CHAT WITH XTAL READERS . . .

### No. 1 of a Series

In each issue of XTAL International Resistance Co. Limited will publish a chatty message to the radio amateurs of Canada. Watch for it.

The May issues of the trade papers contain an insert consisting of a chart showing standard values of Types BT and BW Resistors. This will be an aid to general standardization and in facilitating deliveries. The insert will be so prepared that it can be torn out of the issue and posted up in your workshop. Look it up now.

We think you may be interested in some of the construction details of insulated Metallized Resistors. The low characteristics and safety factor of a resistor depend in large measure upon the operating temperature of the unit. As the operating temperature is reduced, these characteristics improve. In the unique design of the Type BT Resistor the heating properties of the wire leads are utilized to extract heat from the resistor and so reduce its operating temperature. The wire leads are made to serve the dual function of electrical connectors and cooling agents.

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designed wire terminals extend inside the resistance element, and electrical contact is made by permanently bonding the upset head of the wire terminal to the resistance film on the glass tube. A special phenolic insulating compound is then moulded around the resistance element, affording complete protection and complete insulation to the resistance element. The portions of the wire leads which extend inside the resistance element while insulated from the outer resistance coating nevertheless contact the inner wall of the glass tube, and so conduct heat away from the interior of the resistance element to the outside area. In this way a substantial reduction in the temperature of the resistor is obtained.

In the next issue of XTAL we will tell you something about the sizes and ratings of resistors and their insulation characteristics.



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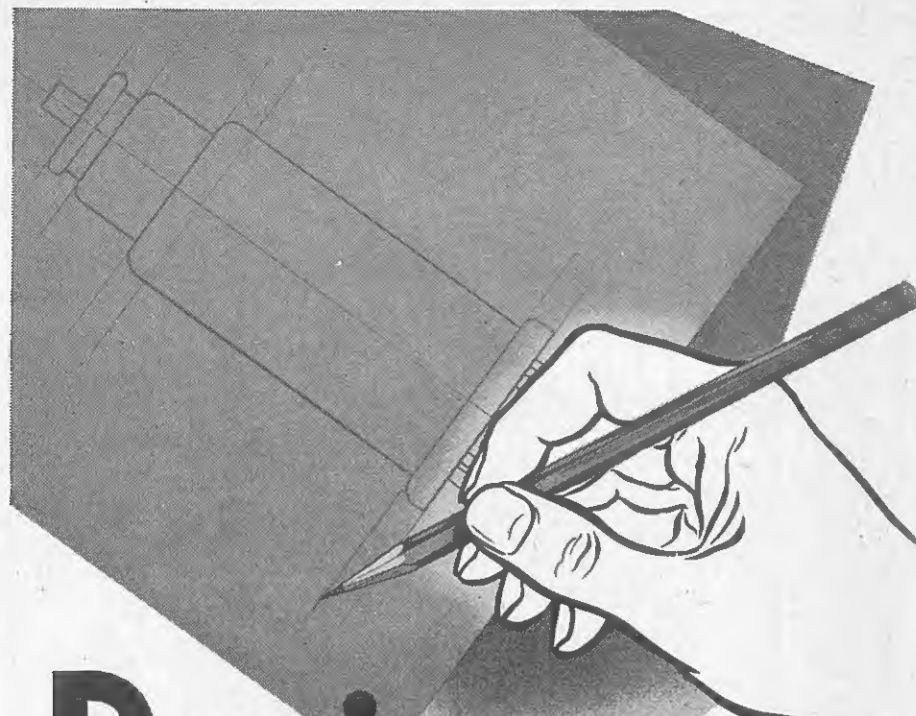
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CANADIAN AMATEUR RADIO OPERATORS' ASSOCIATION  
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## WE DO SOME PLANNING

**T**HE term "Post-war Planning" is being freely used on every hand. The fact heartens us as we emerge from the abyss of the past five and one-half years, and turn our steps towards the awakening dawn of what we hope will be a greater and better era.

The knowledge that there is an objective consciousness of the need for such planning encourages us to face whatever lies before us with optimism and determination. And we are truly thankful for the confidence in the future that grows in us with the realization that action of a positive nature is being initiated towards the unfoldment of plans and codes which will, in a large measure, remove many of the economic problems with which society was plagued in the pre-war world.

It is all very comforting, for we realize that our future economic stability rests, to a considerable extent, on the universal success that will accrue as a consequence of to-day's planning.

The scope of this article does not permit the presentation of an academic definition of the term "economic stability," or of an outline of our conception of a tangible and practical manifestation of that which the phrase represents. It can be said, however, that it is supposed that the term has some relation to a reasonable assurance of steady employment with a sufficiently lucrative factor to permit the individual to protect himself and family against the potentialities of advanced age.

Yes, it is indeed comforting to hear and read of so much planning; to be assured that there will be adequate employment for all.

It is an encouraging sign, however, that not all planning is being done by and for people associated with commerce, or industry, or finance, or any other field in which individuals labour for a living. All work and no play makes Jack a dull boy, and given the necessary factors, Jack can become just as dull in the post-war world as he sometimes did in pre-war days.

Economic stability may be the consequence of economic planning, but if it is to be enjoyed there must be planned avenues of relaxation. We must have hobbies.

Amateur radio meets all the relaxation requirements imposed on any hobby. According to our respective inclinations, it will yield us pleasure from design activity and the use of mathematics, from the use of tools, or from rag-chewing.

The VE Operators' Association is currently active in considering the future of Canadian amateur radio, in planning ways and means of extracting  
(Continued on page 14)

## Introduction to Cathode Ray Oscilloscope Design

By C. N. CHAPMAN

Amateur radio operators will soon have the opportunity to resume their hobby, and many have already planned their post-war "rig" to include an oscilloscope as a "must" on their equipment list. This is only natural, since the cathode ray tube has risen to such an important place in present Radar, and production facilities have made the tube much easier to obtain.

Many amateurs will have become accustomed to the construction and use of cathode ray oscilloscopes, consequently this article will not be of great assistance to them, but to the uninitiated a few remarks will help considerably. The article, then, will present a few general remarks about cathode ray tubes and their application to oscilloscopes and a sweep or time base circuit that the author has found to be simple to construct and dependable.

To describe a cathode ray tube we will limit our discussion to basic design. Electron emission from the cathode is controlled by grid No. 1 (G1), which is in the form of an aperture very close to the cathode. Some tubes employ another aperture next to the G1, termed grid No. 2 (G2), to which a fixed potential is applied. Its function is to maintain electron current constant against variation of anode potential. Electron current so produced is called an electron beam, and after passing through the grid or grids it may be focussed and deflected. Some tubes are focussed by an aperture or a cylinder termed first anode (A1) to which a variable potential is applied. Other tubes are focussed by a solenoid placed around the tube neck just in front of the gun. A variable field is produced parallel to the tube axis. A high potential is applied to second anode (A2), which is usually one or more apertures or a cylinder with apertures in conjunction with the dark coating applied on the inner surface of the glass envelope. This potential determines electron speed through the deflecting system, and directly influences deflection sensitivity. Electrostatic deflection is obtained by placing two sets of plates to act on the beam at right angles to each other. An electrostatic field is produced which causes beam movement toward the posi-

tive plate. Electromagnetic deflection is produced by placing coils about the tube neck near where neck and bulb join and providing a field normal to tube axis. If two fields are produced at right angles to each other a comprehensive picture may be obtained.

Screen light output is a combination of fluorescent and persistent light. Fluorescent light is emitted during the time when electrons are bombarding the

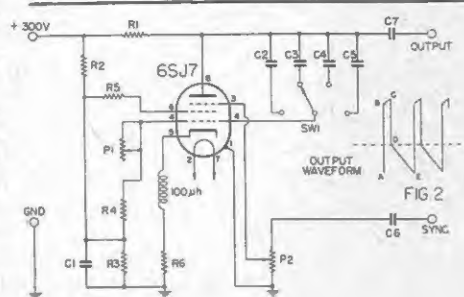


FIG 1

- R1, 2—20,000 ohms, 1 watt.
- R3—1 meg., ½ watt.
- R4—0.5 meg., ½ watt.
- R5—10,000 ohms, 1 watt.
- R6—10,000 ohms, 2 watt.
- P1—10 meg. potentiometer.
- P2—25,000 ohm potentiometer.
- C1—.25 mfd. 400-volt tubular.
- C2—.05 mfd. 400-volt tubular.
- C3—.005 mfd. 400-volt tubular.
- C4—.0005 mfd. 400-volt tubular.
- C5—.0001 mfd. 400-volt tubular.
- C6—100 mfd. mica condenser.
- C7—.05 mfd. 600-volt mica condenser.
- SW1—Single-deck 4-position switch.
- V1—6SJ7.
- 1—100 microhenry choke, single layer, 180 turns ½" dia. form, No. 30 wire.

screen, while persistent light is emitted after electrons stop bombarding the screen. Screen light output is directly proportional to electron speed at the instant it strikes the screen and the quantity of electrons per unit area and per unit of time. Since electron speed is usually deduced from a measurement in volts, the potential applied to the final anode may be assumed to indicate the electron speed at the screen. The quantity of electrons per unit of area and per unit of time is determined by control grid

potential and the speed which the beam is caused to sweep the screen, called writing speed.

Since there will be several cathode ray tubes available, it will be advisable to carefully scrutinize published data before deciding upon the tube to be used. Note carefully screen fluorescent colour and persistence, minimum useful screen diameter, maximum and minimum second anode potential, deflection sensitivity for both sets of deflecting plates and direction of spot movement with respect to potential applied for electrostatic tubes and maximum deflection angle for magnetic tubes. Most cathode ray tubes require the control grid to be never positive. This is important to tube life.

There are several theories about cathode ray oscilloscope design, but for the beginner it will be wise to make the power supply as a unit separate from the cathode ray tube and sweep and amplifier circuits. This will eliminate the possibility of stray magnetic fields affecting the cathode ray tube. If a more compact unit is required they both may be combined into one unit when sweep and amplifier circuits have been proven. It is wise to provide external connections to deflecting plates and control grid to observe wave forms above the frequency response range of the signal amplifier. Provision for external or internal synchronism of the sweep or time base is required to insure a steady picture.

Most commercial cathode ray oscilloscopes use a cathode ray tube employing electrostatic focus and deflection. To interpret any picture presented by an oscilloscope of this type two facts are important. A voltage difference between the deflecting plates will cause a spot movement, and time elapses between the instant the spot starts to move till it returns to its original position. It is obvious that if the spot may be moved in one direction at a predetermined rate we may then apply an unknown voltage to the other deflection plates and observe its potential at any instant.

The circuit shown in Figure 1 is a sweep or time base circuit that most amateurs will be able to construct from material at hand. It has the advantage of linearity at low frequencies, but the high-frequency ranges are more difficult

to obtain. The amateur is advised to make two circuits, one to act as a sweep and fed to the time base amplifier, while the other one may be used to observe sweep linearity. By alternating the circuits the frequency range may be extended satisfactorily. In this way an oscilloscope may be developed and its operation proven.

The following explanation of circuit operation is given to act as a guide for the amateur while he is obtaining operation to suit his needs. Circuit operation is based on plate current cut-off due to G2 and G3 action. When plate current tends to decrease, G1 moves in a positive direction due to the low impedance of the condenser between plate and G1. This causes the capacitor to charge through the plate resistor, G1 to cathode impedance and external cathode impedance. The potential developed across the external cathode impedance places the cathode more positive than G2, which definitely cuts plate current off. As the capacitor charges, its charging current decreases, reducing the potential drop in the external cathode impedance, and the cathode returns to a potential less positive than G2. Plate current commences to flow again, increasing the potential drop across the plate resistor and causing the capacitor to discharge through the tube and grid resistor. As the capacitor discharges the grid becomes less negative to cathode, increasing plate current and causing an increase in potential drop through plate resistor. When G1 is at or near to G2 potential, plate current again decreases, and the action is repeated. The action may be caused to repeat at a predetermined time by applying a positive potential to G3. This is a simple method of synchronizing the sweep to the potential being observed.

The action may be more easily followed from the oscillogram shown in Figure 2. This is the voltage vs. time plot of the plate potential excursions. Assume zero time at point A, tube plate current is cut-off and plate rises to B in a very short time. Here capacitor current through R1 limits further rise till point C, when plate current again flows, increasing IR drop through R1, and plate falls in potential to point D. The portion from D to E we are inter-

(Continued on page 18)



## AN ECHO FROM THE ROCKIES

By F. MANLEY HAINES VE5MQ

Three years ago I came east from Kimberley, B.C., on loan from the Consolidated Mining and Smelting Co. to the Inspection Board of the United Kingdom and Canada for the duration.

I reported to an officer at Research Enterprises Limited, and soon found myself to be connected with a very important organization which was in the thick of building radar and optical equipment—two new fields of endeavour for Canada. The United States had just gone to war, and R.E.L. was the only company set up and manufacturing this much-needed equipment for U.S.A. as well as ourselves.

I found as I became acquainted that there were hams from all districts in Canada working in every section of the radio division, as well as some outsiders, like myself, with the United Kingdom Inspection Board, the U.S. Navy and U.S. Signal Corps, on inspection work for their respective services, also the occasional "G" on liaison work from Great Britain.

At first there was little talk about when we would get on the air again, but there were many personal contacts and friendly "on the spot" QSO's. Then some of the boys who knew hams, connected with other war plants, with the air force, army, etc., used to get together on the last Friday of every month and bend the elbow and discuss many topics—the war, taxes, almost everything but ham radio. Here I met such fellows as Tommy Powell 3ZE, Sam Trainer 3GT, Alf Gillier 3AZI, Bob Haslett 3RH, Carl Emes 3RH, S/L Tom Carpenter 3BD, Len Horsfall 3AOS, John Hooper 3AHA, Eric Bartmann 3VD, and many others. F/S O'Brien kept us laughing till our sides ached with his jokes. W/O2 Ted Barnett, from Calgary, told us tales of his days as an instructor at Yatesbury making radar mechanics out of all comers, good or bad. Eric Leaver put up many fine arguments for our entertainment and, in short, we spent many very enjoyable evenings together.

Then came D-day—the war news was steadily improving—one ham would ask another, "Do you think we will get back on the air again?" An open discussion would follow, and out of it would come

one common question, "Should we organize in order that we might ask for consideration should need arise? The hams of Research Enterprises Limited called a meeting and put this question up for discussion. About a hundred hams representing all parts of Canada attended this meeting, and it was suggested that we should be organized as an all-Canadian radio society. We were reminded that there had already existed such an organization, but that its activities had been suspended for the duration, due to most of the executive being engaged in waging war in various parts of the universe. Nevertheless, it was the opinion of those present that this organization should be revived at once, and some action started to look after the post-war hams' interests. It must be remembered that at the outbreak of the war the Canadian Amateur Radio Operators' Association was still a fairly new organization, and had just reached the point where the going was a little easier for it. A lot of credit is due those fellows who worked so hard to insure the rights of the radio amateurs, and I am afraid they were not always given the support they needed. But the majority of hams are in two classes: one—"Good idea, I will have to do something about it," then he proceeds to forget about it; and the other is just mildly interested, and satisfied to let someone else pull his load. Then of course there are a few skeptics such as the ham in the fifth district who thought the organization was just a money-making scheme for a few Toronto hams, and wrote in and told them so. They wished they had that guy back in Toronto licking the three thousand stamps they had to put on the copies of XTAL for a couple of issues. He would see they were working like h— in order to save some money so they would have enough to pay the publishers of XTAL. I can tell you that the hams in this district are exactly the same as the hams elsewhere—very sincere and full of enthusiasm and willing to go to any amount of work and effort to maintain the rights of the amateurs. About the beginning of 1945 the executive of the

(Continued on next page)

## VE OPS' BANQUET

On May 14th, 1945, at Diana Sweets, 188 Bloor West, Toronto, approximately 110 amateurs and "hope to be's" got together for their first hamfest since the outbreak of hostilities.

All Canadian districts were represented with the exception of VE1. Our most honoured guest was G5UB, J. E. Wetherill, of England, at present stationed in Toronto. First time I'd QSO'd a G. QSA5 R9 too.

We teed off with a four-course dinner, during which many a QSO was had, judging by the heads close together. This was followed by a three-quarters of an hour recess. What a racket, everybody coming in R9x, handshaking, backslapping, it reminded me of some of those good hamfests at Brantford. Discussions were on homegrown supers versus commercial jobs, crystal or E.C.O., etc. I for one forgot myself completely, and nearly made a sked for the following evening on 80.

We finally got things under control once again, and through the courtesy of the Canadian General Electric Co. a sound film, "Sightseeing at Home," was shown, which dealt with television, and the commentator described the theory in the language most of us understood. Thanks, G.E.

Just about this time the Alka-Seltzer radio boys turned up, and we had a most enjoyable half-hour when a half-dozen of the boys were "quizzed." Harvey Dodds did his best to calm the boys a little; you'd think they had never seen a mike before. Incidentally, gang, if you listened to CFRB at 6.50 p.m. on June 20th, you heard this transcription.

Came one of the features of the evening—prizes. We weren't able to locate any T55's, 35T's, Sky rider or HRO receivers, so in our lucky draw we gave away a dozen or so envelopes containing a dollah, yes suh. The winners came up to the mike, announced their name and call, blushed profusely, and said thanks, beating a hasty retreat. The way that mike scared them—C.W. men, I guess. Everyone indicated they had a swell time and wanted another soon. Well, gang, you realize that your executive is very busy preparing and mailing this "mag,"

and that arranging these do's takes time. But arranged it will be, and we are all looking forward to a bigger and better crowd in the fall some time. So stay with us, fellows.

A word of thanks to Keith Warner VE3ME for the loan of his P.A. system; it did a good job.

Manley Haines VE5MQ deserves a pat on the back for the part he played as M.C.

Let us not forget the fellows behind the scene. Thanks, gang.

—C. PHILLIPS, VE3AUS

## W. A. O. O.

With its usual informative and entertaining agenda, the Wireless Association of Ontario met at Room 21, Electrical Building, University of Toronto. An excellent paper was presented by Mr. Carl Nelson, of Addison Industries Ltd., who explained and demonstrated very ably, by means of experimental apparatus, his subject, "Light Beams in Communication." A great number of the Old Timers whom we all know are regular attendants at these meetings were present, and an impromptu "Gathering of the Hams" took up a little time at the end of the proceedings. All hams and their friends are welcome. Why not drop around, fellows? They will be glad to see you!

## AN ECHO

(Continued from previous page)

Canadian Radio Amateur Operators' Association met and set up a board of management of which I am a member. This board of management is about as close to what is going on in radio in Canada as any organization could be, and you may be sure will do everything it can to keep the hams of all districts informed on what is going on in ham circles through the publication of XTAL, until such times as we can have a general election again. Therefore I would ask that each and every ham give this organization his fullest support by becoming a paid-up member. So don't put it off, fellows. Do it to-day.

—VE5MQ, F. MANLEY HAINES.

## ASSOCIATION ACTIVITIES

With so many matters coming to the fore pertinent to amateur radio, and in spite of increased war work, your Association renewed its activities last winter. Minutes and resolutions of some meetings follow:

Minutes of a meeting of the Canadian Amateur Radio Operators' Association held at the Central Y.M.C.A., Monday, February 12th, 1945.

The President, T. Powell, requested that Vice-President S. B. Trainer, Jr., take the chair.

The following resolution which was adopted by the Executive Committee on Sunday, February 4th, was read:

"WHEREAS, it is the opinion of the Executive Committee of the VE Operators' Association that post-war activities and other matters of vital interest to the future of Canadian amateur radio should receive the early consideration of the said committee; and

"WHEREAS, there is some difficulty attached to the holding of meetings of the Executive Committee by reason of the fact that some members of the committee are engaged in one phase or another of the war effort and, therefore, not available for regular meetings; and

"WHEREAS, current conditions have caused an extensive association membership dispersal from home addresses, rendering it impossible to contact all members for the purpose of electing a new Executive Committee; and

"WHEREAS, the constitution provides for the election of members to the Executive Committee from the several Canadian call areas, in order to preserve a truly national spirit and point of view; and

"WHEREAS there are at present residents in Toronto, licensed amateurs from all Canadian call areas, who have taken a keen interest in the future welfare of amateur radio; therefore

"BE IT RESOLVED, that this Executive Committee immediately take such action as is deemed necessary to bring about the formation of a general purpose committee which shall be known as the Committee of Management, and which shall be composed of the officers of the Association and ten (10) licensed ama-

teurs who are members of the Association. The said ten licensed amateurs shall be chosen, appointed, elected or otherwise determined on the basis of two (2) from each call area, provided that should it now, or at any time, be not possible to choose, appoint, elect or otherwise determine two representatives from each call area, then the remaining members of the committee shall appoint from any area, or areas, a sufficient number of members to complete the committee. Be it further resolved that regardless of the method taken to determine representatives to the committee, the members of the Committee of Management will be deemed to be the appointees of the Executive Committee, and the said Committee of Management will be subject to the final direction of the Executive Committee, and that the Committee of Management shall be given full authority to carry on the business of the association, which authority shall include the right to receive and disburse funds of the association, and that the said Committee of Management will be authorized to manage the affairs of the association until the restoration of amateur radio to licensed activity, or until such time as the Executive Committee shall by resolution dissolve the said Committee of Management."

In view of this resolution the following Committee of Management was agreed upon pending acceptance by some appointees not present at the meeting: Ed. DeGrey 2IN, J. C. R. Punched 2KK, John Hooper 3AHA, Carl Emes 3RG, Wally Hainge 3IB, F. J. Heath 4QX, Peter Posnikoff 4ATR, Manly Haines 5MQ, M. Reade 5IO.

Sub-committees were then appointed pending acceptance by some not present:

Post-war Planning—Geo. Crossan 3NB, J. E. O'Brien 3AMO, Sq. Ldr. T. S. Carpenter 3BD, Fred Heath 4QX, Peter Posnikoff 4ATR, Art Vivian 3YY.

Publication—Alf. Gillier 3AZI, Sam. Trainer 3GT, F/Sgt. H. C. O'Brien, R. Macdonald 3APS, George Bottomley 3AXZ, Eric Bartmann 3VD.

Publicity—Geo. Gates 3AOJ, Charles Phillips 3AUS, Norm Law 3AGP, Russell Gray 3ATT, Frank Stewardson 3AZC, Bill Easson 3AWU, Jack Neil 3AJC.

Membership — Len. Horsfall 3AOS, John Hooper 3AHA, Ted Millen 3AEW, Dave Parks 3SX, Bob Haslett 3RH.

The first person on each committee was appointed acting chairman pending permanent selection by each committee.

A meeting of the new Committee of Management will be called shortly. At that meeting the chairmen of the four committee will be invited to attend.

The meeting was adjourned at 10.50 p.m.

Minutes of a meeting of the Committee of Management and sub-committee members, March 19th, 1945.

The meeting was called to order at 8.30 p.m. with Sam Trainer, Jr. acting as chairman, at which time an open discussion took place with regard to electing officers for Committee of Management. The following accepted the responsibility:

Chairman, Sam B. Trainer Jr. 3GT; vice-chairman, Peter Posnikoff 4ATR; secretary, F. Manley Haines, 5MQ; assistant secretary, Harold C. O'Brien, R.C.A.F.; treasurer, Eric Bartmann, 3VD.

Post-war Planning was called on for a report. Geo. Crossan VE3NB, acting as chairman for this sub-committee, requested that the amateurs who have any ideas that will be of assistance to this group be brought to their attention. They require this information in order to map out a programme that will be of the most use to all. The following suggestions have been presented since:

(1) Should Canada have an emergency network, manned by amateurs? In this connection, is there any chance for a separate band?

(2) Could a feasible scheme be worked out and presented to enable amateurs to purchase and import certain radio parts, etc., on a duty-free or reduced duty basis for experimental purposes?

(3) With War Assets Ltd. handling excess military salvage, which includes radio parts and equipment of all types, what arrangements can be made to do business with this company?

Publications was called on for a report. Considerable activity was reported by Alf Gillier VE3AZI, chairman, and Sam Trainer VE3GT. They reported circularizing radio suppliers and manufacturers,

bringing to their attention that XTAL would be republished. It is intended to print five issues this year on the following dates: June 1st, July 15th, Sept. 1st, October 15th, and December 1st, 2,500 copies per edition. Eight hundred copies, which the Radio Society of Great Britain will help to distribute, will go to the Canadian amateurs overseas. The committee also reported that they have been granted sufficient paper by the paper controller, and that XTAL will be 24 to 32 pages. It is hoped that the advertisements will carry the cost of the publication. They further advised that all material, photos and script for this first edition is required at once, and they are counting on the co-operation of all to send in any news, etc. Address all mail to the Association, at Leaside P.O., Ontario.

Publicity and Entertainment.—Chas. P. Phillips VE3AUS reported on his committee's activity. They had a meeting on February 22nd, 1945, where Charles Phillips was elected permanently as chairman. Ways and means were discussed, and it was decided that on May 14th there would be a dinner at Diana Sweets, 188 Bloor St. W. This group reported they are making every effort to get articles into the daily papers and radio publications in Canada announcing our renewed activity, and read Frank Stewardson's (VE3AZC) article which appeared in the last issue of "Radio Trade Builder."

Membership.—Len Horsfall VE3AOS reported that so far they have been making local contacts and had secured 60 or 70 new active members. They are now investigating ways and means of obtaining up-to-date addresses of all the Canadian hams still in Canada, as well as the many hundreds overseas. Every amateur is requested to assist in this regard. The secretary was asked by this committee to find out what amateur activity, if any, was being carried on at the National Research Council, Ottawa. It was requested that we draw to the attention of all amateurs that the Wireless Association of Ontario were holding a very interesting meeting on "F.M.," March 29th, given by R. Anthes and M. Patterson, in the Electrical Engineering Bldg., University of Toronto, at 8.00 p.m., and gladly welcomes all visitors. The meeting adjourned at 10.30 p.m.



# Taylor Tubes



Yes—they were the favorite Transmitting Tubes among Canadian Amateurs—and most all other amateurs, too. And they will again be the favorite Tubes. They still represent the tops in Value—Safety Factor—Performance.

Taylor Tubes, in the Post-War era, will devote its major attention to the Amateur field—just as it did pre-war. You can count on Taylor Leadership and, as always, you will get

**"More Watts per Dollar"**

NEW 1945 TAYLOR MANUAL now ready. Secure one at your Distributor or write to Atlas Radio Corporation, 560 King Street West, Toronto 2, Canada.

Distributed to all Leading Canadian Amateur Radio Parts Supply Houses by

**ATLAS RADIO CORPORATION**

560 KING STREET WEST

Toronto 2, Canada

TAYLOR TUBES, INC., CHICAGO 47, ILL., U.S.A.



**ALPHA ARACON**  
*Radio Company Limited*

**"Canada's Foremost Radio Supply House"**

We wish to take this opportunity of congratulating the VE Operators' Association on its resuming activities and again publishing XTAL.

In pre-war days we looked forward to having the boys drop in. Our new quarters have greater facilities for you to meet and "chew the rag."

**GOOD LUCK**

**29 ADELAIDE STREET WEST  
TORONTO 1, ONTARIO**

**Telephone ADelaide 1312**





One of the Mobile Radar units of the first convoy shipped from Research Enterprises Limited, showing some of the original employees who manufactured it.

—Reprinted through the courtesy of R.E.L.

When John Q. Citizen wondered what had happened to the lad down the street who used to mess up his favourite radio program by muttering "CQ, CQ, hello CQ," he didn't realize that what he called "a radio fan" had enlisted in His Majesty's services, or was working in some organization such as the one at Leaside, Research Enterprises Limited, helping to produce all types of radar equipment for the armed forces of the Allied Nations.

In the picture above are some of the big names in Canadian radar and a very small number of the hams who help to make up the radio division of R.E.L.:

1, Ralph A. Hackbusch VE9AW, formerly director of the radio division; 2, Col. W. E. Phillips, president; 3, Fergus McKay, formerly of Westinghouse; 4, Syd. Kumhyr VE3APU; 5, Ed. deGrey VE2IN; 6, George Cates VE3AOJ; 7, Norman K. Law VE3AGP; 8, Vernon Hayward ex-VE4UB; 9, Lyle Ward VE2HF; 10, F. F. Pounsett, Jr., chief engineer; 11, G. A. Bottomley VE3AXZ.

## WE DO SOME PLANNING

(Continued from page 5)

the utmost pleasure from our hobby.

The war-time population of Toronto holds amateurs from all sections of the country. This fact makes it possible to hold meetings at which the attendance is truly national. The consideration of plans for future activities can be carried out from a Dominion-wide point of view. In pre-war days it was not possible for a Canadian executive to convene which was truly national in the character of those present, as judged on the basis of residence.

The VE Operators' Association is taking advantage of the presence of amateurs from all call zones, and is making possible the formulation of plans which have regard for opinions from coast to coast. The outcome will be a bigger, and a better, Canadian amateur radio world.

The first step toward the achievement of that end will be the publication of

five issues of XTAL during the balance of the present year, the second of which will be released as soon as possible.

It is the present intention that each future issue will convey a further report on the details of post-war planning so that our readers may have some impression of the form post-war activity might take. The Committee of Management, in its building of the framework of post-war activity, must necessarily obtain the opinion of absent Canadian amateurs if national activity is to be planned. The future reports to which we make reference will reflect the thoughts of the boys overseas and elsewhere as they send them along.

## HAM-ADS

This being the first new issue, we lack ham ads. If you have something to sell, send it in. The rate is 20c per line. If you have something to swap, see the short under that title.

## 12,500-MILE TWO-TUBE S.W. RECEIVER

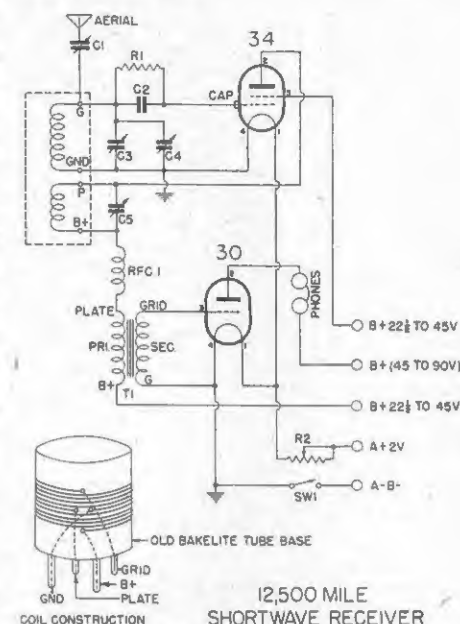
By P. W. POSNIKOFF VE4ATR

How would you like to have a little two-tube short-wave set that could pull in signals from Australia and the four corners of the globe? A set that could be built for less than ten dollars, including batteries, and yet out-perform receivers costing many dollars more. With a good ground, the aerial simply a piece of wire around the room moulding, LY1J, a Lithuania ham with a 100-watt phone rig, was heard consistently. Then KA4LH, Lee Hinkley, working in a gold mine in the jungle, one hundred miles from Manila, Philippine Islands, was easily heard on 20-meter phone. Code signals from Afghanistan and other remote corners of the earth were always well received, as well as Admiral Byrd's expedition from the Antarctic.

For an embryo ham or for anyone desiring to listen for code signals and short-wave programs this set will be worth while constructing. The set is not complicated to build, but a few pointers should be followed:

- (1) Use a well-tinned iron and solder all connections carefully with resin core solder.
- (2) Make certain that all parts and tubes are in good condition.
- (3) Avoid long leads.
- (4) If audio howl is encountered, reverse grid and ground connections of the audio transformer.
- (5) Remember long-distance signals are received when the detector is just on the threshold of oscillation.
- (6) Use a good ground obtained through a good electrical connection.
- (7) Make certain that coil connections are not reversed, or regeneration will not take place.
- (8) Try changing the value of R1 for best and smoothest performance.
- (9) Make certain that the rotors of C5 and C1 are not grounded.

Before concluding, I would like to remind you that these tubes have a very delicate filament, and under no circumstances must any potential greater than two volts be applied. The voltage may be adjusted by means of the 30-ohm rheostat R2. This is done in a dark



- 12,500 MILE SHORTWAVE RECEIVER
- C1—50 mmfd. max. variable condenser (rotor must be insulated from the panel).  
 C2—.0001 mfd. mica condenser.  
 R1—1 to 5 meg. grid leak (3 meg. worked best in this model).  
 C3—140 mmfd. var. condenser, main tuning.  
 C4—20 mmfd. var. condenser, bandspread.  
 C5—250 mmfd. var. condenser, regeneration control.  
 T1—5:1 ratio audio transformer.  
 RFC1—2.5 m H.R.F. choke.  
 R2—30-ohm rheostat.  
 SW1—Toggle switch.  
 3 4-prong sockets.  
 2 Binding posts (aerial and ground).  
 2 Phone tip jacks.  
 5 Battery terminal binding posts.  
 Batteries, wire and plugs.  
 20-Meter coil—Close spaced, using No. 24 enamelled wire, both windings 5 turns each in the same direction, wound on an old 4-prong tube base.  
 40-Meter—L1 8 turns, L2 6 turns. Same construction as in 20-meter coil.

room, and with exactly two volts the filaments indicate a faint dull red glow.

I have found that a metal chassis should be avoided and good bakelite used instead. However, to limit any "hand capacity" that may be present, a grounded metal panel is recommended.

## CQ VE

With such good news emanating from the fighting fronts all of us at home are looking forward eagerly to the return of our VE's, and with them we are looking forward to returning to the air waves. With the excellent work that is being, and has been, done by the A.R.R.L. toward the protection of our bands in America it would appear that we will get back nearly all our old bands, and if not those, some to take their place. At this writing there is doubt if we'll ever listen to the 160 meter gang again. That was a very popular band among the 'phone boys. However, it was also a band that caused us many a bad mark among BCLs. But let us not worry too greatly . . . present indications would show that we will still have to be on our toes not to interfere with BCLs . . . this time, perhaps around 60 Mc. The "walkie-talkie" band will be another dandy. A California KW on there will do something.

It is nice to ramble on. But seriously, from perusing other parts of this issue, you will see that our Association is on solid ground. We are preparing for the many more thousands of VEs-to-be. We DO need your help. "Dear Reader: We wish your news and views." It is the same old chant, so why dress it up differently. This is your Association. Our constitution clearly indicates our success can only come from collective effort. We're not going to plead with you to let us hear from you. Whether

you join or not, we KNOW you'll drop us a line.

With the interest that is coming from you all, and which is being counted on, plans are being made for a real XTAL for 1946. We see clearly an immense body of VE's, and a real publication for their medium.

## - ATTENTION! SERVICEMEN

When the Association ceased activity late in 1941 we had compiled a list of 600 of you on active service in the various branches. To that has been added hundreds of 100% war workers. Prior to 1942 we missed some of you, and since then, many. Please let us have your name, rank and address, in order that you will receive following issues of XTAL. It is sent free to all "On Active Service." Be sure you get all issues promptly by mailing the application form in this issue. Membership is free to servicemen, so simply disregard the fees. VE3GT

## NAVY BLUE

The Navy band, with its tall, dark, handsome crooner, had just finished "Night and Day" amid cheers and swooning war-workers. One ham who was listening said, "It's a good thing they aren't playing in a WAVE canteen." "Why," asked his neighbour. "Because there wouldn't be any standing waves," the ham replied.

### APPLICATION FORM

#### THE VE OPERATORS' ASSOCIATION

#### LEASIDE P.O., ONTARIO

I hereby make application for (renewal) (new) membership in the VE Operators' Association. One dollar is enclosed, which entitles me to membership and subscription to XTAL for one year from the date of this application.

NAME ..... CALL .....

ADDRESS .....

Proficiency Certificate No. .... Date .....

**E**RIE RESISTOR OF CANADA LTD. are pleased to welcome back into circulation the VE Operators' Association publication, XTAL.

With the many thousands of trained operators soon to return to peace-time occupations, many will have been bitten by the BUG and will become active amateurs.

We hope in future issues of this publication to introduce to you a number of our products which will help you build better Receivers and Transmitters.

Drop us a line if you wish any information on the following:

Resistors (Carbon or Wire Wound).  
Ceramicon Compensating Condensers.  
Ceramicon Compensating Trimmers.  
Silver Mica Condensers U.H.F. Type.

## Erie Resistor of Canada Limited

128 PETER STREET

TORONTO 2, ONT.

**C**ONGRATULATIONS and best of luck to XTAL and the Canadian Hams it serves on the occasion of its first "Post-War" issue.

We all hope for an early and complete peace, with the return of Amateurs to the air.

## T. S. FARLEY, Limited

HAMILTON

Radio Coils and Special Products



## TO THE YOUNG SQUIRTS

Did you ever wonder what a "Ham" is and represents? What! you thought he was just a "Guy" like yourself, and thought it would be wonderful to be able to build a rig and communicate with other "guys" all over this "Old Sphere." Well, young fellow, that is almost an answer, but the truth is this. The "Ham" is a very peculiar type of person who, although he may not know it, it naturally friendly, not only to his immediate friends but to all types and nationalities. He does not recognize race, creed or colour. Whether you have a couple of watts trying to carry your weak signals through space or a mighty K.W. blasting its thunderous path to the Heavyside layer and across continents. Whether you operate from a small corner of your bedroom because the O.M. said the family was getting bigger and they needed the space you had in that spare room. Whether you have cleaned up that corner of the basement and laboriously built with your own hands that little "Palace" of your own, that sacred spot, "The Shack." Whether you had a very special room added to the home to house that glorious equipment which is the envy of your less affluent friends. No, nothing like that matters, he is a "Ham," and he is what you want to be. When you can't get the antenna to take the load from that 6L6 bravely struggling to deliver the goods—when that crystal won't wobble—when that coil you wound to cover 20 and 40 doesn't peak on 20—when the rig you have laboured on refuses to go. When these things happen to you, the "Ham" will be right with you with any help he can give, and I mean give, for no filthy lucre enters into the picture. He is the type of man who goes as radio op on Polar explorations and always returning with new dope on communications to help his fellow "Hams," who, when in time of emergency sits at the key or mike for hours and days as the only means of keeping in touch with the area outside that affected, who has at times died or been injured in performing his duty to public service. This could go on indefinitely, but should give you an idea of what you have to live up to. Service, Tolerance and International Friendship.

## Kitchener-Waterloo Club Formed

Another new amateur radio club has been organized, namely, the Kitchener-Waterloo Radio Amateur Club. At the present time the club is meeting at the Y.M.C.A. in Kitchener. The regular meetings are held on the fourth Tuesday of each month. A code class has been organized, and plans have been made to have some very interesting speakers. Amateurs who are interested in attending these meetings are to address their communications to O. C. Boettger, 105 Elgin Street, Kitchener, Ontario.

We received a letter from W. R. Pottle VE4AO, who is Supervising Radio Inspector at Regina. He sends his regards to all the gang and reports that their local club, "The Regina Transmitting Amateurs Association," has remained organized throughout the war, their activities consisting of one or two dinner meetings each year. We are also very grateful to Mr. Pottle for his co-operation in helping us to compile our new mailing list.

## C.R.O. DESIGN

(Continued from page 7)

ested in, since this is our linear sweep or time base. When this potential change is applied to a sweep amplifier and thus to the required deflecting plates, the beam may be caused to move across the screen at a constant rate. It is important to observe that the potential is becoming less positive. This means that in order to make the beam write from left to right it must be applied correctly to the deflecting plates.

There has been no attempt made to describe power supply and amplifier circuits, since the author considers information about them to be readily obtainable. There are many publications that one may obtain to further his knowledge about cathode ray tube applications. When the amateur wishes to obtain a suitable text he may consider "Time Bases," by O. S. Puckle, published by John Wiley & Sons.

The author wishes to acknowledge the assistance rendered by P. W. Posnikoff, VE4ATR, and G. M. Hargraft, in obtaining experimental data.

## NEW MEMBERS

Since the first of the year, when the Canadian Radio Operators' Association decided to resume their activities, there has been a considerable increase in membership as well as a large number of renewals from hams who were members in pre-war days.

Several enthusiastic letters have been received by your committee from amateurs living in nearly all parts of Canada. One thing that is stressed in these letters is the desire to become active members and to help the cause in any way possible.

At the present time there is a great need to contact as many amateurs and prospective amateurs as possible. Due to a large number of amateurs joining the armed forces or working in war industries throughout the country, our original mailing list has become somewhat obsolete. However, you can help a great deal to bring this list up to date by sending in the names, present addresses and call letters of any amateurs or prospective amateurs living in or around your district. Here is your

chance to make a real contribution to the progress of the "VE Ops." So what say, fellows? Let's hear from you and your friends and ensure the success of this Association.

The following is a list of new members who have joined the Association since January 18th, 1945:

### New Membership

G2IS J. W. Paddon  
VE2IN Ed. deGrey  
2KK J. C. R. Punchard  
3ACL Ivor Nixon  
3AEW T. I. Millen  
3AGP N. K. Law  
3AHA J. F. Hooper  
3AJC J. Neil  
3AKN Ted Thompson  
3AKP Keith Bradley  
3AMK D. H. Saville  
3AMR Roy Adams  
3AOA Eric Loveys  
3AOJ G. R. Cates  
3AQX Marshall Knowles  
3ATT Russell Gray  
3AUS C. P. Phillips  
3AYZ G. A. Bottomley

(Continued on page 24)

## Attention, Ve's!

When you come to Buffalo, be sure to drop in at DYMAC, INC.—the largest radio parts and equipment distributor in the Western New York area. Here you will find all kinds of Ham gear to gladden experienced Hams' hearts. A cheerful welcome awaits you!

# DYMAC Inc.

WHOLESALEERS OF RADIO PARTS AND TUBES  
DISTRIBUTORS OF ELECTRONIC EQUIPMENT

2329-31 MAIN ST. (near Leroy), BUFFALO 14, N.Y.

PARKSIDE 2300

## Constitution of the VE Operators' Association

1. The name of the Association shall be "The VE Operators' Association," hereafter called the Association. When the name shall appear, or be referred to in public, it may be cited as "The Canadian Amateur Radio Operators' Association."

2. The objects of the Association shall be:

- (a) To foster intelligent and serviceable use of amateur radio.
- (b) To further international good-will.
- (c) To co-operate in the observance and enforcement of amateur radio laws.
- (d) To present non-partisan information on amateur radio activities by operating Official Amateur Stations, or by such other means as may be deemed expedient.
- (e) To extend assistance towards the clarification of amateur radio problems.
- (f) To guard and further the radio interests of every Canadian amateur radio operator.
- (g) To promote contests and such other activities as are deemed to give effect to the objects of the Association in the furtherance of the interests of Canadian amateur radio operators.
- (h) To promote the cultural and recreational use of leisure by creating a more comprehensive appreciation of the potential value of amateur radio as an agent of fraternalism.

3. The Association shall be affiliated with such body or bodies as a majority of the members of the Association shall decide.

4. The headquarters of the Association shall be in the City of Toronto.

5. The office of the Secretary, the Treasurer, and of the Publications Manager shall be at headquarters.

6. (1) Membership shall be available to any person holding an Amateur Experimental Station License issued by the Department of Transport, provided not more than two years have elapsed since the date of issuance of such license.

(2) Associate membership shall be available to any person having a bona fide interest in amateur radio, and who cannot qualify for membership under the provisions of sub-section 1.

(3) The voting privilege of an Associate member shall be restricted to the nomination and election of members to the Executive Committee except in such matters which the Executive Committee may from time to time extend to the vote of Associate members.

7. (1) Dues shall be one dollar annually, payable in advance, and shall be for a period of one year from the date on which membership is granted according to the records of the Association.

(2) A member shall be automatically suspended if his dues are not paid within sixty days from the date upon which they are due and payable.

8. The Association year shall be the calendar year.

9. The affairs of the Association, and all matters of business in connection therewith, shall be vested in the Executive Committee.

10. The officers of the Association shall be a President, a Vice-President, a Secretary and a Treasurer.

11. There shall be an Executive Committee composed of the members elected from each Call District, the Chairman of each Chapter, and the Immediate Past President.

12. The Executive Committee shall, from its own numbers, elect the officers and a Publications Manager.

13. (1) The Executive Committee shall appoint Under-Secretaries in charge of the activities of the Association relative to each

(2) Any member of the Association in good standing shall be eligible for appointment as an Under-Secretary.

14. The Executive Committee shall, at its first meeting following election, appoint two auditors.

15. (1) Any member in good standing whose nomination qualifies pursuant to the provisions of this constitution, and who is not rendered ineligible by sub-section 2, shall be eligible for nomination or election to the Executive Committee.

(2) A member engaged in the manufacture, sale or rental of amateur radio equipment shall not be eligible for nomination or election to the Executive Committee.

16. (1) Each Call District shall be entitled to elect one of its members to the Executive Committee.

(2) Whenever a Call District includes within its area an Association membership of fifty, it shall be entitled to elect a second member to the Executive Committee, and an additional member for each twenty-five members or fraction of twenty-five in excess of fifteen over the first fifty members.

(3) If, after an election, the membership of a Call District shall increase to the extent that it is entitled to additional membership on the Executive Committee the Secretary shall forthwith institute such action as is necessary to cause the election of the additional Executive Committee member.

(4) If the increased membership referred to in sub-section 3 occurs within ninety days prior to the date upon which general election nominations are receivable, the election provisions of sub-section 3 shall become inoperative and of no effect.

17. (1) Nominations for Executive Committee members shall be received by the Secretary from the first to the twentieth days of September inclusive. Should the twentieth day of September fall on a Sunday or legal holiday, the time for the receiving of nominations shall be extended to include the immediately succeeding business day.

(2) The nomination of a member as a candidate for the Executive Committee shall be rejected by the Secretary if such nomination does not carry the signatures of at least five members in good standing.

18. (1) Immediately following the last day for receiving nominations for the Executive Committee, and prior to the first day of October next following, the Secretary shall prepare and issue to members in each Call District a ballot showing the names of candidates in their respective Districts.

(2) Ballots for the election of members to the Executive Committee must be received in the office of the Secretary not later than the thirty-first day of October following their issuance. Should that day fall on a Sunday or legal holiday, the time for receiving ballots shall be extended to include the next succeeding business day.

(3) In lieu of forwarding ballots to members they may be included in, or as part of, any publication issued for or by the Association.

(4) Whenever required, or deemed necessary by the Executive Committee, a special election may be held at times other than herein specified. On all such occasions the Executive Committee shall set all the dates necessary for the receiving of nominations and holding of the election.

19. (1) Immediately following the election of the Executive Committee, the Secretary

of the following departments: Members, Clubs, Chapters, Technical, International, Legislation, Publicity and Expansion, and Statistics.

shall prepare a ballot for the election of officers, which he shall issue to the members of the newly-elected Executive Committee not later than the tenth day of November.

(2) The officers' ballot shall show the names of all elected members of the new Executive Committee.

(3) Officers' ballots shall be returned to reach the office of the Secretary not later than the thirtieth day of November next following their issuance. Should that day fall on a Sunday or a legal holiday, the time for receiving ballots shall be extended to include the next succeeding business day.

20. The Secretary shall appoint tellers and such further election assistants as may be required.

21. The officers and Executive Committee shall assume their offices and duties on and from the first day of January following their election except in the case of a special election subsequent to January first, when the elected official shall immediately assume his office and duties.

22. (1) The name of the Chairman of a Chapter must be recorded with the Association Secretary before the said Chairman shall become a member of the Executive Committee.

(2) The recording of the name of the Chairman of a Chapter, as required by sub-section 1, must be completed not later than the thirty-first day of October in order that the Chairman may be eligible for office for the next ensuing year.

(3) If the name of a Chairman is recorded pursuant to sub-section 1 between the first day of November and the thirty-first day of December next, the Chairman shall become a member of the Executive Committee on and from the first day of January following. If the name is recorded subsequent to the first day of January, the Chairman shall immediately become a member of the Executive Committee.

23. The Chairman of a Chapter who is a member of the Executive Committee, if unable to attend any meeting of the Committee, may appoint any officer of his Chapter to represent him, and such representative shall, at such meeting, exercise the full rights of a member of the Executive Committee. Such representative must deposit at the Executive Committee meeting a credential from the said Chairman before he shall be entitled to sit as a member of the Executive Committee.

24. In the event of the absence of the President, the Vice-President and the Immediate Past President at any meeting of the Executive Committee, the meeting shall elect from those present a member who shall act as Chairman.

25. A quorum of the Executive Committee shall be eight.

26. (1) A meeting of the Executive Committee may convene if at least four members are present, but the decisions of any such meeting at which a quorum is not present shall be ineffective until at least eight members of the committee shall have cast a vote, a majority of whom shall decide the issue.

(2) The vote referred to in sub-section 1 shall include the vote of the members constituting the meeting at which a quorum was not present.

(3) All matters upon which a vote is taken at any meeting as provided by sub-section 1 shall be submitted by the Secretary to absentee members of the

committee together with a record of the vote and a summary of the discussion preceding the vote.

27. The President shall:—

(a) If present, preside at all meetings of the Association and of the Executive Committee.

(b) Countersign all cheques.

(c) Have general supervision of the affairs of the Association.

(d) Have authority to grant dispensation whenever he deems it advisable for the change of date or place of any meeting of the Association or of the Executive Committee.

(e) Have authority to grant dispensation, whenever he deems it advisable, for the suspension of meetings of the Executive Committee during the months of June, July or August, or any part or parts thereof. During such recess the officers shall have full power to transact the ordinary business of the Association.

(f) Call all meetings of the Association and of the Executive Committee, and shall call a special meeting of the Executive Committee whenever eight members of the committee shall petition for such.

28. The Vice-President shall:—

Assist the President in the general supervision of the Association, and shall assume the duties of the President during the absence of that officer.

29. The Treasurer shall:—

(a) Receive and have custody of all monies of the Association and deposit same in a chartered bank approved by the Executive Committee.

(b) Sign all cheques and keep financial records.

(c) Submit an audited financial statement at each annual meeting of the Association, or whenever required to do so by the Executive Committee.

30. The Secretary shall:—

(a) Keep records of the meetings of the Association and of the Executive Committee.

(d) Notify all members of meetings. Such notification may be by personal call, or through the medium of any publication issued by or for the Association.

(c) Send copies of the minutes of the meetings of the Executive Committee, to members of the committee who, by reason of residence, are unable to attend meetings of the committee.

(d) Prepare for distribution to members, a monthly summary of the activities of the Association and of the Executive Committee. Such distribution may be through the medium of any publication issued by or for the Association.

(e) Perform such other duties pertaining to his office as may be required or directed by the Executive Committee.

31. Auditors shall:—

Examine the books, vouchers and other financial records of the Association, and shall certify to the accuracy of all financial statements.

32. Under-Secretaries shall:—

(a) Conduct the correspondence and direct the activities of the Association in so far as those duties relate to their respective departments.

(b) Give effect to the wishes and directions of the Executive Committee.

(c) Give such assistance to the officers as may be required of them.



33. Meetings of the Association may be called by the President whenever deemed necessary, but in any year in which an annual meeting is not held, a statement of the affairs of the Association shall be sent to every member. Such statement in lieu of being otherwise prepared may appear in any publication issued by or for the Association.

34. An annual meeting may be held in any year, of which all members shall have at least sixty days' notice from the date of mailing notice of such meeting or from the date of publication of the notice.

35. The Executive Committee shall meet on the first Wednesday of each month, and as often in addition thereto as may be necessary. Should the first Wednesday of any month fall on a legal holiday, the date of meeting may be postponed to a day within the calendar month to be set by the President, or by a previous meeting of the committee.

36. (1) Authorization for the establishment of a Chapter may be granted by the Executive Committee upon the application of five members in good standing.

(2) A Chapter shall exist for the purpose of affording members an opportunity of discussing Association matters and for such other purposes as the Chapter members shall decide.

(3) Any member of the Association in good standing shall be eligible for membership in the Chapter serving his locality or in the nearest Chapter thereto.

37. It shall be within the power of the Executive Committee to withhold the issuance of authority for the establishment of a Chapter in any city, town, village or locality where a chapter has already been authorized.

38. The Executive Committee may withdraw and cancel the authority for the establishment of a Chapter, or under which a Chapter was established, for any reason it deems sufficient.

39. The Association shall not be liable for the actions of a Chapter, or for any obligation or debt incurred by a Chapter.

40. (1) The officers of a Chapter shall be a Chairman, a Vice-Chairman and a Secretary, who shall be elected at a meeting of the Chapter to be held between the first and fifteenth days of October, inclusive, of each year.

(2) Immediately following the election of the officers of a Chapter the Secretary of the Chapter shall transmit to the Association Secretary the names, addresses and calls of each officer.

41. The Secretary of a Chapter shall communicate with the Association Secretary once each

month, furnishing him with a report of the activities of the Chapter since the date of his last report.

42. Chapters shall meet at least twice each year.

43. A Chapter shall adopt by-laws for its government, but such by-laws shall not become effective until approved by the Executive Committee of the Association.

44. (1) Any member in good standing may propose an amendment of the constitution by petitioning the Executive Committee, provided his petition is signed by himself and at least nine members in good standing.

(2) Any member of the Executive Committee may, at any meeting of the Executive Committee, introduce a proposed amendment of the constitution.

(3) Upon receipt of a petition which is sufficiently signed as required by sub-section 1, or upon a favourable vote of any amendment proposed pursuant to sub-section 2, the Executive Committee shall immediately place the proposed amendment before the membership for the purpose of voting thereon, allowing a period of at least thirty days for the return of votes.

(4) A three-fifths favourable vote of all ballots cast shall be necessary to amend the constitution.

45. (1) The order of business at meetings of the Executive Committee shall be:—

Minutes of previous meeting.  
Communications.  
Bills and accounts.  
Reports of officers.  
Reports of committees.  
Unfinished business.  
General business.

(2) The order of business at General meetings shall be:—

Minutes of previous meeting.  
Report of the President.  
Report of the Secretary.  
Report of the Treasurer.  
Report of Publications Manager.  
Report of Executive Committee.  
Reports of committees.  
General business.

(3) The reports of the President, Secretary, Treasurer, Publications Manager and of the Executive Committee, referred to in sub-section 2, shall be required to be presented at annual meetings only.

46. In all matters of procedure not covered by this constitution, Bourdoin's manual on procedure shall prevail.

## MARSLAND ENGINEERING COMPANY

### ENGINEERS — MANUFACTURERS

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RADIO AND COMMUNICATION  
COMPONENTS

KITCHENER

SMALL GEARS AND PINIONS

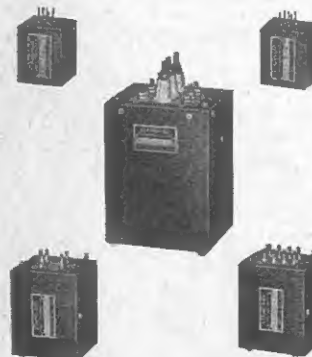
INDEX MOVEMENTS FOR  
WATER, GAS, AND POWER  
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ELECTRO-TIN PLATING

CANADA

## Transformers for the Amateur



- POWER TRANSFORMERS
- AUDIO TRANSFORMERS
- FILTER CHOKES
- SPEAKER FIELD COILS
- SOLENOID COILS
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"STANDARDIZE WITH STANDARD"

# STANDARD RADIO PRODUCTS

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## COILS AND RADIO TRANSFORMERS

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For the past 4 years our business has been devoted almost entirely to expediting radio supplies to essential war services.

We are proud to have had the opportunity to serve in our small way, and proud, too, of the splendid showing being made by many of our old "Ham" customers, now serving in war industry and in our armed forces throughout the world. When V-Day comes we will welcome you back, making good our slogan, "The Ham's Best Friend."

**WHOLESALE RADIO  
CO. LTD.**

1133 BAY ST.  
TORONTO

### ATTENTION

The Committee of Management, at time of going to press, is contacting War Assets Corporation with a view to our members obtaining surplus materials.

It is strongly recommended that you write AT ONCE to the Association for any requirements you may have for parts at present, or in your plans for getting back on the air. These requirements may include communication receivers, test equipment, such as signal generators, etc., transformers, chokes, filter condensers, cathode ray and general tubes, co-axial and multi-conductor cables, connectors, rack frames, etc., etc., etc.

If arrangements can be made it is the intention of the Association to purchase materials for distribution to you on a non-profit basis.

Send in your list at once, and be sure sufficient details are included, e.g., 25 or 60 cycles, type of mounting, etc. Prices will depend upon requirements, and if arrangements are made, will be submitted for your approval.

Act to-day!

### NEW MEMBERS

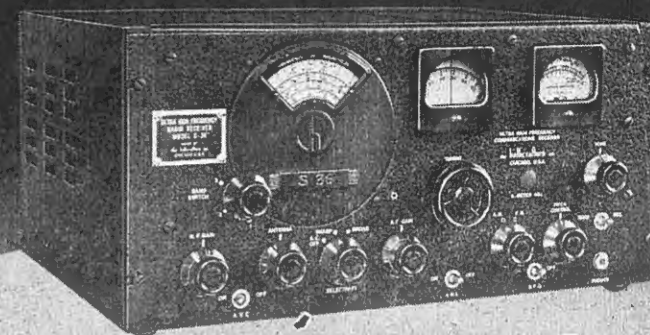
(Continued from page 19)

3AZC F. E. Stewardson  
3CS E. Allard  
3IB Wally Hainge  
3JN Joe Carp  
3KQ R. M. Foster  
3MB George Crossan  
3OV Charlie Pook  
3QL R. Cartmill  
3RH R. Haslett  
3UQ Jack Reeve  
4AAI A. Parmley  
4ADB C. Green  
4ADC C. A. Dulmage  
4AGM E. J. Antoine  
4ATR Peter Posnikoff  
4GN J. Davidson  
4SD Hugh Bennett  
5MQ M. Haines

Space does not permit listing the new Associate Members, which totals 79 at this time.

**5 YEARS AHEAD OF ITS TIME**

**FM  
AM  
CW**



**27.8 to 143 Mc**  
Covers old and new FM bands

## hallicrafters Model S-36

EXACTLY five years ago—in 1940—Hallicrafters introduced a very high frequency communications receiver with a range of 27.8 to 143 Mc. This model was clearly five years ahead of its time in its anticipation of new and exciting possibilities for superior performance on the higher frequencies. Today Model S-36 stands by itself as the only commercially built receiver covering this range. It is outstanding for sensitivity, stability, high fidelity. With its extraordinary VHF versatility it is ready for immediate application in the ever widening fields of FM and higher frequency development work. Engineering imagination at Hallicrafters is reaching out beyond the next five years, beyond the present known limits of radio technique so that Hallicrafters equipment will continue to be always ahead of its time, above and beyond your best expectations.



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THE HALLICTRAFTERS COMPANY, MANUFACTURERS OF RADIO AND ELECTRONIC EQUIPMENT, CHICAGO 16, U. S. A.